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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,687	08/25/2003	Robert Sigurd Nelson		3778

7590 08/10/2005  
ROBERT SIGURD NELSON  
2922 Upshur Street  
San Diego, CA 92106

EXAMINER
SUNG, CHRISTINE

ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/648,687	Applicant(s) NELSON ET AL.	
	Examiner Christine Sung	Art Unit 2878	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 August 2003.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>0204</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Objections*

1. Claim 9 recites the limitation "the detector layers" in lines 1-2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-5, 7-10 and 14-23 are rejected under 35 U.S.C. 102(e) as being anticipated by El-Hanany et al (US Pre Grant Publication 2003/0010924 A1).

Regarding claim 1, El-Hanany et al. discloses an enhanced Compton gamma camera used in nuclear medicine (claim 10), comprising:

A plurality of radiation detector modules (claim 11), wherein each module includes:

At least one edge on radiation detector (figure 3A);

A communication link (elements 114, 118 and 124) for transferring data between the module and a computer system.

Regarding claim 2, El-Hanany et al. discloses prior art which includes strip radiation detectors (see figure 2).

Regarding claims 3-4, El-Hanany et al. discloses the limitations set forth in claim 1, but does not explicitly specify that the detectors and modules will have different properties.

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However, it is inherent that since each element will have small differences in their properties, i.e. intrinsic noise or parasitic capacitance. Therefore it is inherent that each module or detector will have different a slightly different property than the adjacent module or detector.

Regarding claim 5, El-Hanany et al. discloses prior art which includes a dual sided parallel strip detector (figure 2).

Regarding claim 7, El-Hanany et al. discloses that the edge on radiation detector is a 2-D pixilated array detector (page 3, paragraph 0030)

Regarding claim 8, El-Hanany et al. discloses that the detectors are stacked (see figure 3A).

Regarding claim 9, El-Hanany et al. discloses that the layers of the detectors use different materials (i.e. element 102 is made of CdZTe and the element 118 is made of a polymer).

Regarding claim 10, El-Hanany et al. discloses that the gamma camera elements (elements 118, 102, 124 and 114) are all mounted and adjusted before use.

Regarding claim 15, El-Hanany et al. discloses that the camera operates as an enhanced edge-on gamma camera (abstract).

Regarding claim 16, El-Hanany et al. discloses that the camera operates as an enhanced edge on PET camera (page 2, paragraph 00014).

Regarding claims 14 and 17, El-Hanany et al. discloses that the camera detects radiation (element 112).

Regarding claim 18, El-Hanany et al. discloses that the camera is used for radiographic imaging (page 1, paragraph 0001).

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Regarding claim 19, El-Hanany et al. discloses that the camera is used for radiographic imaging (page 1, paragraph 0001), but does not specify CT radiographic imaging. However, radiographic imaging encompasses CT imaging and is therefore an inherent that the invention as disclosed by El-Hanany et al. is applicable to CT imaging.

Regarding claim 20, El-Hanany et al. discloses that the camera is irradiated from the side (see figure 3A).

Regarding claim 21, El-Hanany et al. discloses an edge on radiation detector (see figure 3A) used in nuclear medicine wherein interaction height information or depth of interaction is used to determine sub aperture resolution (page 4, paragraph 0034).

Regarding claim 22, El-Hanany et al. discloses that the radiation detector is a semiconductor array detector (page 1, paragraph 0001)

Regarding claim 23, El-Hanany et al. discloses that the radiation detector is a scintillator or crystal array detector (page 2, paragraph 0016).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

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the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over El-Hanany et al. (US Pre Grant Publication 2003/0010924 A1) in view of Nygren (US Patent 5,434,417 A).

Regarding claim 11, El-Hanany et al. discloses the limitations set forth in claim 10, but does not specify near-edge on imaging or staggering the detector elements. However, such a detector configuration is disclosed by Nygren (figure 5, element 20). One of ordinary skill in the art would be motivated to use the detector configuration as disclosed by Nygren with the invention as disclosed by El-Hanany et al. in order to allow for convenient electrical connection between the processor and the detector.

Regarding claim 12, El-Hanany et al. discloses the limitations set forth in claim 1, but does not specify a collimator for restricting the acceptance angle of incident radiation. However, collimators for gamma cameras and other edge-on detectors are well known in the art, as demonstrated by Nygren (see figure 5, element 66). One of ordinary skill in the art would be motivated to use the collimator/detector configuration as disclosed by Nygren with the invention as disclosed by El-Hanany et al. in order to decrease the amount of scattered or erroneous radiation from reaching the detection element, thus increasing the accuracy of the detector.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over El-Hanany et al. (US Pre Grant Publication 2003/0010924 A1) in view of Lingren et al. (US Patent 6,046,454 A).

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Regarding claim 6, El-Hanany et al. discloses the limitations set forth in claim 1, but does not specify a dual sided crossed strip detector. However, such detectors are known in the art, as disclosed by Lingren (see figure 15 A). One of ordinary skill in the art would be motivated to use the detector as disclosed by Lingren with the invention as disclosed by El-Hanany in order to increase the accuracy of determining the position of the detected radiation.

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over El-Hanany et al. (US Pre Grant Publication 2003/0010924 A1) in view of Nygren (US Patent 5,434,417 A) further in view of Pfoh (US Patent 5,400,379 A).

Regarding claim 13, El-Hanany et al. in view of Nygren discloses the limitations set forth in claim 12, but does not specify a shield for covering specific radiation detectors. However, Pfoh et al. discloses a mask or shield (figure 4B, element 60) that selectively covers the detector elements (column 3, lines 50-61). One of ordinary skill in the art would be motivated to use the mask element as disclosed by Pfoh with the invention as disclosed by El-Hanany in view of Nygren in order to decrease the processing time of image data when high resolution images are not needed.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Sung whose telephone number is 571-272-2448. The examiner can normally be reached on Monday- Friday 7-3 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christine Sung  
Examiner  
Art Unit 2878

CS



**DAVID PORTA**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**